PROJECT SPECIFICATION STATEMENT

A. Project Code: _USK I_   B. Program _ISP_

C. Project Title _Future Skill Requirements for Software Development_

D. Objective: _To help the IS Management identify the skills mix requirements needed to take advantage of the emerging techniques, methodologies and tools for developing application software, and to analyze the effects of the changing skills mix on the overall IS function._

E. Audience (order of priority)

	User/Vendor	Job Function	Type Company	Company Characteristics
1	U	IS Director - VP	Fortune 1000	
2	U	IS Strategic Planners		
3	U	IS Tech Support Managers		
4	U	IS Systems Dev. Managers		
5	U	End-Users Involved in Syst Dev.		

F. Reasons for Choosing the Subject,
   1. _Systems development bottleneck related to the lack of skills required to use available technology_
   2. _Traditional systems development life cycle going away to new methodologies utilizing new tools, requiring new skills_
   3. _Major impact on IS recruiting & staffing activities_
   4. _Major impact on IS training & education strategies_
   5. _Major impact on future organizational structure of IS_

G. Scope of Study

1. Includes: Analysis of the effect the latest software development productivity tools and methods are having on the skill mix requirements of the corporate IS function. Analysis of the skill requirements for the support of end-user developed systems. A broad look at the changing structure of the IS function brought about by the new approaches to software development.

2. Excludes: Excludes any evaluation of specific productivity tools. Excludes issues related primarily to systems programming (ie, modifying operating systems, tuning the system, writing compilers, etc) Excludes analysis of other systems development skills which are unrelated to software development (ie data gathering, proposal preparation, cost/benefit analysis, etc.)

H. Uses of Report: To identify the future skills mix requirements for the IS function to assist in the development of strategic staffing plans. To evaluate how others are approaching the problem of staffing, recruiting, and training to provide the necessary human resources for future software development.

I. Issues

1. What impact are the systems development productivity techniques and methodologies having on the skill requirements of the IS function?

2. What impact is the trend toward end-user developed systems having on the IS skill requirements?

3. How are these new systems development approaches affecting the training and education activities for the IS function?

4. How are these new systems development approaches affecting the staffing and recruiting activities for the IS function?

5. How are the career paths of the IS professionals changing?

6. How are companies handling the problem of human resource skills obsolescence?

7. What will the organizational structure and skills mix of the typical IS department be three to five years in the future?

J. Market Forecast ☒ No ☐ Yes _____
                                              Period

K. Delivery Modes Covered   *N/A*

☐ Remote Computing (RCS)   ☐ Systems Software – Mainframe/mini

☐ Batch Processing   ☐ Systems Software – Personal Computer

☐ Facilities Management   ☐ Application Software – Mainframe/mini

☐ Professional Services –   ☐ Applications Software – Personal
  Programming and Analysis   Computer

☐ Professional Services –   ☐ _____
  Education and Consulting

☐ Integrated Systems   ☐ _____

☐ _____   ☐ _____ ,

L. Interview Profile

1. Type of Interview:

	Type of Interview							
Type of Respondent	On–Site		Phone		Mail		Total	
	Number	R/A or Senior	Number	R/A or Senior	Number	R/A or Senior	Number	R/A or Senior
User			20	5			20	5
Vendor								
Other (Specify) _____								
Total			20	5			20	5

INPUT

2. Respondent Characteristics

Number of Interviews	Job Function	Company Characteristics (e.g., SIC, Size, etc.)
7	IS PLANNING	3 FINANCIAL 6 Discrete MFG
2	IC MANAGERS	3 PROCESS MFG 2 INS.
11	IS DIRECTORS	2 GOVNMT. 4 DISTRIBUTION

M. Page Allocations

Text	51
Exhibits	18
Sub-total	69
Appendices	6
Total Pages	75

INPUT

Q. Other Research

    1. Library: Source: ___*Journal Articles*___

                 Objective: *Current info on software development techniques and methodologies*

    2. Reports:

Code	Title	Objective
_____	*Productivity tools report*	_____
_____	*specifications)*	_____
_____	_____	_____

    3. Other Sources:

        _____

        _____

        _____

P. Project Management

    1. Project Manager _____

    2. Initiation Date _____   Start Date _____

    3. Midpoint Review _____

    4. First Draft Due _____

    5. Word Processing
       Begin Date _____

    6. Shipping Date _____

Q. Other Comments and Direction _____

_____

_____

_____

_____

_____

R. Detailed Table of Contents Attached? Yes_____   No_____

INPUT

TABLE OF CONTENTS SPECIFICATION

REPORT CODE:	TITLE				
SECTION TITLE:		PAGES:			
SUBSECTION TITLE:	CONTENT/SOURCE		# Exhibits	= Text	Total

INPUT

1984 QUARTERLY SCHEDULING PLAN (Q3)

PROJECT: USKI
PROJECT LEADER: Steve Kerns
DATE: 6-14-84

ACTIVITY / PROJECT	NAME	MAN DAYS	EFFI-CIENCY	ESMD	CORP WEEK END	27(4) 7/6	28 7/13	29 7/20	30 7/27	31 8/3	32 8/10	33 8/17	34 8/24	35 8/31	36(4) 9/7	37 9/14	38 9/21	39 9/28
PROJECT AUTHORIZATION/ SPECIFICATION	RW	1.5		1.5	6/15													
	SK	0.5		0.5														
Q DESIGN	RW	0.5		0.5														
	SK	0.5		0.5														
Q APPROVAL/ REVIEW MEETING																		
INTERVIEWS ON SITE ( ) NO.																		
INTERVIEWS PHONE ( ) NO.	RW	2.0		2.0														
DATATAB AND ANALYSIS	RW	3.0		3.0														
WRITING	RW	4.5		4.5		1.5	2.0	0.5										
ABSTRACT	RW	0.5		0.5		.		Δ0.5 ∇										
QC	SK	1.0		1.0				Δ1.0 ∇										
REPORT PROD. AND SHIPPING									R WP ∇	R final ∇	Print ∇	Ship ∇						
~~PRESENTATION~~ MANAGEMENT	SK	1.0		1.0					0.5 ∇									
"THANK YOU" MAILED																		
PLAN	RW	12.0		12.0		1.5	2.0	1.0										
ACTUAL	SK	3.0		3.0				1.0	0.5									
CUM P/A																		
						1.5	2.0	2.0	0.5									

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ACTIVITY / PROJECT	NAME	MAN DAYS	EFFI-CIENCY	ESMD	CORR WEEK END	APRIL 14 4/6	15 4/13	16 4/20	17 4/27	MAY 18 5/4	19 5/11	20 5/18	21 5/25	JUNE 22(4) 6/1	23 6/8	24 6/15	25 6/22	26 6/29
PROJECT AUTHORIZATION/ SPECIFICATION	RW	1.5		1.5	6/15											▲1.5 RW▽ 1.0▲ SK▽		
	SK	0.5		0.5														
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	SK	0.5		0.5														
Q APPROVAL/ REVIEW MEETING																		
INTERVIEWS ON SITE ( ) NO.																		
INTERVIEWS PHONE ( ) NO.	RW	2.0		2.0													▲1.5 0.5▽	
DATATAB, ReH. AND ANALYSIS	RW	3.0		3.0													▲1.0 2.0▽	
WRITING	RW	4.5		4.5														▲0.5
ABSTRACT, Cover, PR, etc.	RW	0.5		0.5														
QC	SK	1.0		1.0														
REPORT PROD. AND SHIPPING																		
PRESENTATION MANAGEMENT	SK	1.0		1.0												▲		0.5
"THANK YOU" MAILED																		
PLAN	RW	12.0		12.0												1.5	3.0	3.0
ACTUAL	SK	3.0		3.0												0.5	0.5	0.5
CUM P/A																		
		15.0		15.0												2.0	3.5	3.5

INPUT

R12/83

USK I

PERSONNEL DISTRIBUTION

	Managers	P/A	IC (IC IN 3 YR)			TELE	DB	Svc	OPS
	4	12	4	6	1		3	2	3
	35	120	3	3	6		14	9	5
	20	30	4	12	4		7	7	10
			5	7					
	8	24	2 3	4	3		1	5	
	8	50	0 10	17	5		4	3	4
	20	38	9	15	16		7	8	
	55	119	0 13	20	37		46	21	
	12	49	0 1	6	12		6	4	10
		80	0 1	3	6		Ø	6	
	5	18	0 2	4	1		Ø	2	
	5	44	0 10	12	22		4	8	
	10	35	4	5			4	6	
		100	9	12	12		20	20	
TOT	182	719	78	126	125		116	101	32
AV	17	55	6	9	10		9	8	6
TOT			111						
	15%	49%	6%	9%	8%		7%	6%	

STAFFING & EDUCATION

FREQUENCY DISTRIBUTION OF STAFFING METHODS

RECRUITING (AGENCIES, PERIODICAL, ETC)	TRAINING IS PERSONNEL (PROMOTIONS, CHANGES, ETC)	TRANSFERING USERS (TRAINING SEC, CLERKS, ACCTS ETC)	TRAINING COLLEGE GRADS (ENTRY LEVEL FROM OUTSIDE)	OTHER
1 1 1 1 2 3 1 1	2 3 2 2 2 1 2 3	4 3 3 4 2	2 4 3 1 3	3
1 3 3	2 2 1 1 1	3 4 4 3 1	4 3 2 2 4	
TOT 19	TOT 24	TOT 31	TOT 28	
AV 1.6	1.8	3.1	2.8	

FREQUENCY DISTRIBUTION OF TRAINING & ED METHODS

PROFESSIONAL CONDUCTS IN-HOUSE COURSES	INDIVIDUAL OUTSIDE COURSES	AUDIO/VISUAL TRAINING SERVICE CONTRACT	FORMAL INTERNAL TRAINING DEPT	OTHER
3 4 4 3 2	2 2 3 3 3 2 3 2 2	1 1 2 2 2 1 1 1	1 1 1 4 3 1	
3 1 3	1 3 2 2 2	2 2 3 1	1 3	
23	32	19		
	2.9	1.6	1.8	
7.1	7.7	5.4	8.2	

USKI - CLIENT POLL

FUTURE SKILL REQUIREMENTS FOR
SW DEVELOPMENT

1. How important is it to analyze the impact on skills from new development techniques? ie Prototyping, End-User Systems Dev, Application Generators, Packages etc.

2. Has the advent of PC's and fourth generation languages & relational techniques, had a significant impact on changing the skill requirements of the development staff? Should this be covered?

3. Do you believe the changing skills requirements have had, or will have, an effect on recruiting and/or training activities. Should we include approaches?

4. Are you finding a move back to the era of specialists? (ie Unix, CP/M, fourth generation languages, graphics, VSAM) Would you like us research to address the problem?

5. Do you think project leaders and managers are having a difficult time staying on top of the changing technologies? Do they want to cling to the traditional approaches? Are they afraid they are becoming obsolete? Would you like to see how others are handling this situation?

6. Has your organization changed its structure over the past 3 years? Do you see it possibly changing over the next 3 years? Would you like to see how others have reorganized?

7. When recruiting a systems analyst for instance, have the skills priorities changed over the past three years? Do you see them changing over the next three years? Should this be addressed?

8. Do you believe the COBOL programmer is a modern day dinosaur? If so, shouldn't we be planning a career path for these people?

JIM DOLGONAS, UC
642-7273   CB 6-19   1:00 PM

- Skills obsolescence!
- FOCUS is their main language
- COBOL programmers
- Doesn't believe functional knowledge
- Reporting structure is changing
- Who introduces new tools to top managers?
- Specialists use to be consultants to internal IS only.
- Reward system - recognition, compensation,
- Career paths - How can operations personnel be used to assist end-users.
- They have whole in the technical awareness for end-user computing

Stanley Jarzynski - American Hoechst

- They are just getting into prototyping (Kogan)
- They are looking for strong Business Skills
- Skills of COBOL programmer changing to PC
- They are reducing development staff and shifting
  people to the info center 3 current 8 mdgs 15 following yr
- They have been header toward decentralizing of
  systems development for some time
- They have corporate control over hardware/sys't Sw
- They have not yet started using 4th gen lang
- They have an entry level training program designed
  for college students (a lot of self teaching methods)
- What are the skill requirements for the specialist
  installing DSS systems?

Arthur Hilley

1. End User Proficiency ISPF + FOCUS enquiries
       COBOL Programmers Declining

- HIRING STRONG BUSINESS SKILLS FOR BETTER DESIGN

  - POINTING TOWARD DECENTRALIZATION
  - TECH SUPPORT (SERVICES) IN DEMAND AND MORE
    DIRECT CONTACT WITH END-USERS

  - CROSS-TRAINING BUSINESS SYSTEMS. SYSTEM PROGRAMMER

  - OUTSIDE TRAINING MOSTLY IBM NO FORMAL INHOUSE

  - MIGRATION FROM BS TO TECH SUPPORT

  - HIGHLY SPECIALIZED AGAIN

  - DECENTRALIZATION. BUS SYS ANALYST MOVING

  - LOT OF PACKAGE DONE LAST 5 YRS - CUSTOM NEW WAYS OF PART

    CURR. {
       PROGRAM INTEGRATION
       CENTRALIZED RECRUITING
       CONSULTANTS
       LARGE COMPLEX SYSTEM DEVELOPMENT
    }

  - MAINTENANCE HAS MOST COBOL CODERS

  - OLD SYSTEMS WILL DIE AND USERS WILL
    PICK UP NEW SYSTEM ALONG WITH PACKAGES

- IS IS CONSULTANT TO THE COMPANY WITH CHARGE OUT
    SYSTEM R.O.I

  - HOW TO OTHERS HANDLE CHARGE OUT

- Include Systems analysis skills and user interface capabilities
  - Be careful not to overlap with Software productivity Report —
        See back for copy Spec.
- What are the required skills? What were they 3 years ago,
    what will they be in 3 years. Why are skills changing?
- How to develop or acquire Skills — which makes the
  most sense
- Sources of skilled personnel
- Generalists vs Specialists
- Impact of End User Computing on Skills Requirements.
- What Strategies should IS employ to satisfy its skills requirements.
        What are the organizational implications to IS & the
            Company?
- How will changes in Skill requirements effect current
    Staffing. Will programmers, as we know them today,
    still exist in three years: Why?
- What is the affect on management. How will it be different
  from managing current Staff.?

                    4 to 6 clients